

REMARKS/ARGUMENTS

Claims 1-21 are pending. Claims 1, 8, and 15 have been amended. No claims were cancelled or added. The amended claims are fully supported by the specification and no new matter has been added.

35 U.S.C. § 112

Claims 1-21 were rejected under 35 U.S.C. § 112, first paragraph, as being unpatentable for failing to comply with the enablement requirement. Claim 1 recites, among other elements, "[a] method for determining an amount of storage for a level of detail other than the base image . . . comprising . . . calculating the amount of storage based on the size and magnitudes without using a multiply operation," and claims 8 and 15 recite similar features. This rejection is respectfully traversed.

Page 5, lines 3-4 states "[i]f the size of the base image is not known, it can be calculated by taking the product of its magnitudes." Since claim 1 recites a *method for determining an amount of storage for a level of detail other than the base image*, this multiplication step involving the base image does not prevent determining the amount of storage for another level of detail without using a multiplication. Page 6, lines 12-20 is an exemplary section of the specification that enables calculating the amount of storage for a level of detail (LOD) other than the base image based on the size and magnitudes without using a multiply operation.

Accordingly, applicants respectfully request withdrawal of this rejection of claim 1 and its dependent claims. Independent claims 8 and 15 recite similar features to claim, and the rejection to claims 8 and 15 and their dependent claims should be withdrawn for similar reasons.

35 U.S.C. § 103 Rejection, Zhao in view of Kacevas et al.

Claims 1-2, 7-9, 14-16, and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 6,002,406 to Zhao in view of U.S. patent 6,429,873 to Kacevas et

al. (Kacevas). Reconsideration and allowance of claims are respectfully requested for the following reasons.

Claim 1 is allowable over Zhao and Kacevas, alone or in combination, as those references fail to disclose or suggest all the elements of claim 1. For example, claim 1 recites, among other elements, "*determining an amount of storage for a level of detail other than the base image in a MIP map*." To the contrary, Zhao discusses the memory size of a group of cells, not for the entire LOD.

In column 9, lines 8-11, Zhao describes allocating a "memory size equal to the maximum LOD cell size times the maximum number of LOD cells which are designated with an LOD cell." Certain LOD cells are designated with an LOD cell because, for example, the designated cells are likely to be accessed in memory along with that particular LOD cell. There is no suggestion the cell and the designated cells make up an entire level of detail in a MIP map. Thus, Zhao does not teach or suggest determining an amount of storage for a level of detail other than the base image in a MIP map. Claim 1 and its dependent claims should be allowable for at least this reason.

Furthermore, claim 1 also recites, "*identifying a size for an immediately larger level of detail and a magnitude for each dimension of the immediately larger level of detail; and calculating the amount of storage based on the size and magnitudes without using a multiply operation*." Kacevas does not have these features of the invention.

At column 1, lines 24-35 in the background of the invention, Kacevas discusses different levels of detail for an object where the dimensions of the LODs differ by powers of two. Kacevas mentions retrieving the LOD itself from memory, not the variable containing the amount of storage. See column 1, lines 23-25. This part of Kacevas does not disclose or suggest calculating the amount of storage for a LOD. Additionally, retrieval is not a step of calculating the amount of storage, but is accessing the value from memory. In this invention, there is a specific desire not to store the values of the amount of storage for retrieval later, but to calculate the values efficiently at run time. See page 2, line 6 to page 3, line 7. As to dividing the amount of storage by two, Kacevas only discusses the dimensions of an LOD being half of the previous

map. See column 1, lines 32-35. Thus, this part of Kacevas does not show or suggest the step of calculating the amount of storage for an LOD.

At column 4, lines 18-31, Kacevas discusses finding the memory address of the selected LOD within a two-dimensional model. One step involves the calculation of "the total number of texels that are sequentially stored in memory ahead of the selected map." Column 4, lines 24-25. One accomplishes this by multiplying the starting v coordinate by the pitch. Column 4, lines 20-22. The starting v coordinate is the sum of the heights for the LODs larger than the selected LOD. See column 3, lines 14-17. The pitch is the same or larger as the width of the largest map. See column 2, lines 53-59. This step calculates the starting address for the selected LOD, not its amount of storage. Furthermore, the height times the pitch is not the amount of memory because the width of an LOD other than the base image is smaller than the pitch. Thus, Kacevas does not teach or suggest calculating the amount of storage.

Additionally, the only suggestion that Kacevas makes concerning the calculation of the starting address uses a multiplication so Kacevas does not suggest a calculating step without using a multiply operation. As for addition substituting for multiplication, the addition of multiples of a number is the definition of a multiplication; therefore, by definition the aforementioned step is a multiplication step. Thus, this part of Kacevas does not show or suggest these features of the invention.

Accordingly, claim 1 and its dependent claims are allowable.

Claim 8 recites similar features as recited for claim 1, and claim 8 and its dependent claims should be allowable for at least similar reasons as claim 1.

Claim 15 recites similar features as recited for claim 1, and claim 15 should be allowable for at least similar reasons as claim 1.

35 U.S.C. § 103 Rejection, Zhao and Kacevas et al in view of Baldwin.

Claims 3, 5-6, 10, 12-13, 17, and 19-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhao in view of Kacevas and in further view of U.S. patent 6,650,333 to Baldwin. Reconsideration and allowance of claims are respectfully requested for the following reasons.

Claim 3 is allowable over Zhao, Kacevas, and Baldwin, alone or in combination, as those references fail to disclose or suggest all the elements of claim 3. For example, claim 3 recites, among other elements, "*dividing the size by 2ⁿ and discarding any remainder, where n is the number of non-zero magnitudes remaining after dividing each of the magnitudes.*" Zhao and Kacevas do not show this element, which the examiner confirms. Additionally, Baldwin does not teach this feature of the invention.

At column 10, lines 20-33, Baldwin discusses dividing the width by 2 and ignoring the remainder. Baldwin does not mention dividing the size by two. Thus, Baldwin does not have this feature of the invention.

Accordingly, claim 3 and its dependent claims are allowable.

Claim 10 recites similar features as recited for claim 3, and claim 10 and its dependent claims should be allowable for at least similar reasons as claim 3.

Claim 17 recites similar features as recited for claim 3, and claim 17 and its dependent claims should be allowable for at least similar reasons as claim 3.

35 U.S.C. § 103 Rejection, Zhao, Kacevas et al., and Baldwin in view of Merz et al.

Claims 4, 11, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhao, Kacevas, Baldwin and in further view of U.S. patent 4,692,880 to Merz et al (Merz). Reconsideration and allowance of claims are respectfully requested for the following reasons.

Claim 4 is allowable over Zhao, Kacevas, Baldwin, and Merz, considered separately or in combination, as those references fail to disclose or suggest all the elements of claim 4. For example, claim 4 recites, among other elements, "adding one to the amount of storage when any of the n least significant bits of the size of the immediately larger level of detail is non-zero." Zhao, Kacevas, and Baldwin do not show this element, which the examiner confirms. Additionally, Merz does not teach of this feature of the invention.

At column 7, lines 1-11, Merz discusses adding one to the basic subspan address X, Y. X and Y are the offset coordinates within a cell, or more specifically the address for such

coordinates. Since X and Y do not signify the amount of storage for an LOD, Merz does not disclose or suggest this feature of the invention.

Accordingly, claim 4 should be allowable.

Claim 11 recites similar features as recited for claim 4, and claim 11 should be allowable for at least similar reasons as claim 4.

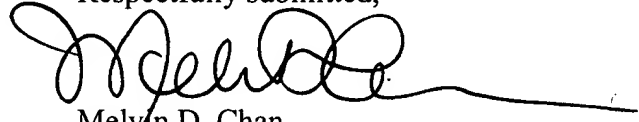
Claim 18 recites similar features as recited for claim 4, and claim 18 should be allowable for at least similar reasons as claim 4.

CONCLUSION

In view of the foregoing, applicants believe all claims now pending in this application are in condition for allowance. The issuance of a formal notice of allowance at an early date is respectfully requested.

If the examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400, extension 5213.

Respectfully submitted,



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